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Proposed Water Quality Objectives
through Manitoba's Watershed Classification Process:

Red and Assiniboine Rivers and their tributaries within and downstream of the City of Winnipeg

Summary Document

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An introduction...

YOUR OPPORTUNITY TO PROTECT THE QUALITY OF THE RED, ASSINIBOINE & THEIR TRIBUTARIES

The Honourable Glen Cummings, Minister of Manitoba Environment, has asked the Clean Environment Commission to hold public hearings in the fall of 1991 to define a vision for the Red and Assiniboine rivers and their tributaries within and downstream of the City of Winnipeg. These *Watershed Classification* hearings will establish *Water Quality Objectives* for these rivers and streams.

Manitoba Surface Water Quality Objectives define the quality of water which is necessary to protect important water uses. When met, these objectives protect human health, aquatic plant and animal communities, and other designated water uses. The Manitoba Watershed Classification process is an example of sustainable development at work, as we protect and manage our environment for the benefit of Manitobans today while ensuring that these important environmental assets will be available for future generations to also use and enjoy.

Once a classification is established for the area, a feasible long-term management strategy can be developed. Further hearings will be held to establish site-specific environmental licences for facilities, such as the City of Winnipeg's three sewage treatment plants. These licensing hearings will be guided by the overall water quality objectives established in the initial Watershed Classification hearings.

The 1991 fall hearings will focus on an area which includes the Red River from the South Floodway Control Structure to Lake Winnipeg, and the Assiniboine River from St. Francois Xavier (west of Winnipeg) to the Red River. Water Quality Objectives will also be established for the major tributaries of the Red and Assiniboine rivers within this geographic area. These include the Seine River,

La Salle River, Cook's Creek, Bunns Creek, Devils Creek, Sturgeon Creek, Omand's Creek and Netley Creek (Figure 1).

This report, in summarizing Manitoba Environment's Technical Document on the Red and Assiniboine rivers and the tributaries in the area under study, contains:

- An explanation of Manitoba Surface Water Quality Objectives and the Watershed Classification Process.
- A review of the existing uses of the rivers and an evaluation of the water quality as it relates to those uses.
- Manitoba Environment's proposal which recommends Surface Water Quality Objectives to protect existing and potential river uses.
- A short directory on how to obtain more information and become involved in upcoming Clean Environment Commission hearings.

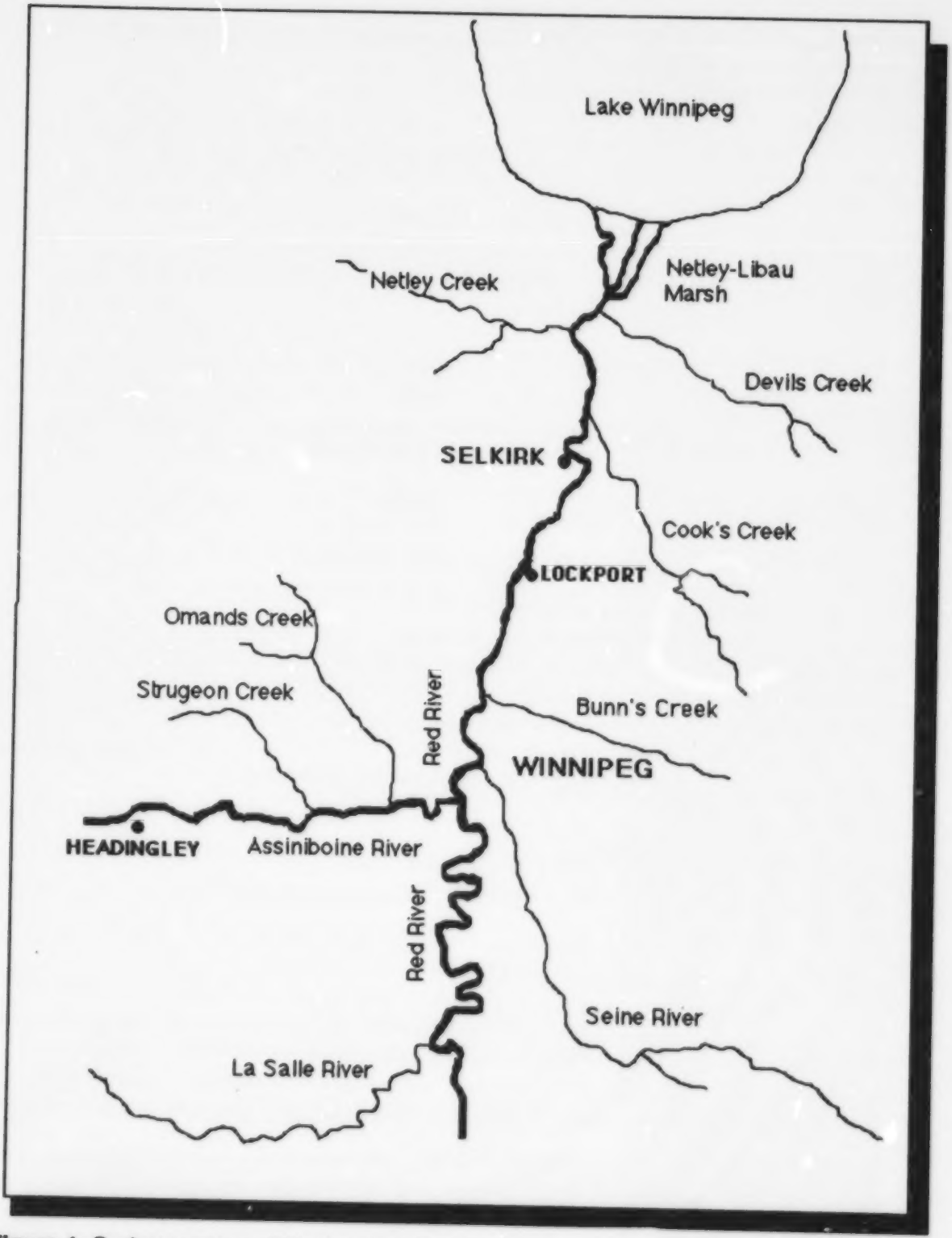

Figure 1: Surface waters within the classification area.

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The Watershed Classification process...

WATER QUALITY OBJECTIVES PROTECT OUR RIVERS

The waters of Manitoba's rivers, lakes and streams are crucial to the well-being of our Province. To protect the quality of the surface waters and develop feasible long-term water quality management strategies, Manitoba has adopted a Watershed Classification Process.

WHAT IS A WATERSHED CLASSIFICATION PROCESS?

Watershed classification identifies water uses and sets Manitoba Surface Water Quality Objectives to protect beneficial water uses. This is accomplished through a process that encourages wide-ranging public debate on the current and potential water uses. In doing so, the principles of sustainable development can be applied to these important environmental assets.

WHY A WATERSHED CLASSIFICATION PROCESS?

Manitoba's rivers, lakes and streams have a number of important uses including domestic and agricultural consumption, aquatic life and wildlife habitat, recreation and industrial use. Manitoba's Watershed Classification Process has been put in place primarily to maintain, protect or enhance these beneficial uses.

HOW ARE WATERSHEDS CLASSIFIED?

Based on the concept that consultation and public involvement is critical in developing a water quality management plan that benefits the whole community, the Watershed Classification Process moves beyond government to involve input and public participa-

tion from industries, environmental groups and private citizens.

A FOUR STEP PROCESS

The Watershed Classification Process involves four important steps:

1. Technical evaluation of the watershed water quality, normally undertaken by Manitoba Environment.
2. Public review, often including public hearings conducted by the Clean Environment Commission, which provides recommendations to the Minister.
3. Classification of the watershed by the Minister.
4. Implementation of a long-term feasible water quality management strategy, according to the objectives set out in the Watershed Classification.

In some cases, further environmental reviews and hearings will be required on site-specific projects or facilities, such as sewage lagoons and industrial plants, which will have a significant impact on achieving the objectives established in the Watershed Classification.

1. THE TECHNICAL EVALUATION

In this initial step, the Water Quality Management Section of Manitoba Environment prepares a report on the proposed watershed classification which involves the following:

- Existing and potential water uses for the water-bodies are identified within the classification area; for example, these may include drinking water, aquatic life and wildlife, recreation, agricultural use or industrial consumption.

- The existing water quality conditions are then evaluated. For each water use, Manitoba has adopted Surface Water Quality Objectives which define minimum levels of quality necessary to protect important water uses. Manitoba Surface Water Quality Objectives are used to assess the existing compatibility of the water quality conditions with the identified uses. This information is expressed as the percent of time that the water does not meet the objectives. When possible, the cause and trends of these water quality problems are also documented.

- For each water body within the classification area, water quality objectives and an appropriate level of protection are proposed. The Manitoba Surface Water Quality Objectives offers four different levels of protection for our waters. The four levels of protection are as follows:

Routine Protection

The routine level of protection applies to water bodies which may have been affected by development to some degree, for example, in the populated region in the southern portion of the province. This level of protection consists of the following combination:

- The use of economically available technology-based treatment systems to remove as many pollutants as practical; and

- The use of Manitoba Surface Water Quality Objectives to develop effluent discharge limitations for those remaining pollutants that may not be adequately removed by the standard treatment systems.

This level of protection prevents unacceptable impacts, while recognizing that some changes will result from the developed nature of the region.

High Quality Designation

This designation places greater restriction upon

development within certain pristine areas in the province. A "high quality designation" may be considered for water-bodies which:

- flow through or are bounded by provincial parks;
- support diverse or unique animal or plant life that is sensitive to man-induced water quality alterations;
- are within relatively undisturbed watersheds;
- possess outstanding water quality characteristics; or
- are designated as Canadian Heritage Rivers.

Exceptional value designation

Bodies of water designated as exceptional value would be given the highest level of protection. Development would be prohibited in such areas, thus ensuring that water quality would not undergo human-induced changes from nearby development. Water bodies falling into this category may include:

- ecological reserves;
- wild and scenic rivers or lakes;
- waters that provide habitat for rare and endangered plants or animals.
- waters considered sensitive such that irreversible harm will result following human impact.
- waters whose exceptional quality and value as a future resource precludes the assignment of present uses; or
- waters designated as Canadian Heritage Rivers

No Protection

Circumstances at some sites may determine that a specific water body should not be afforded protection, such as a small lake or pond that may become incorporated into the wastewater treatment system of an industrial or municipal development.

2. THE PUBLIC REVIEW

Prior to the Clean Environment Commission hearings, Manitoba Environment releases the proposed Watershed Classification report for wide ranging public, technical and scientific review. The documents, which describe the water uses and water quality conditions, also propose Water Quality Objectives for the classification area. They are presented so that people affected by the process have the information they may need to make decisions and represent their interests at the hearings.

The date and location of the hearings are advertised in local papers, and background documentation is made available in Manitoba Environment's public registries within the area being classified.

The public is encouraged to offer their comments or concerns regarding the proposed classification to the Clean Environment Commission hearings. These comments or concerns can be in a verbal or written format.

3. CLASSIFICATION BY MINISTER

The Clean Environment Commission evaluates the technical information and public opinions, and completes a detailed report which offers recommendations to the Minister of Manitoba Environment.

The Minister may accept or reject the recommendations, or request additional information from Manitoba Environment, the Clean Environment Commission, or others as deemed necessary. The Water Quality Management Section of Manitoba Environment, upon receipt of the Minister's recommendations, will then release a finalized watershed classification document.

4. WATER QUALITY MANAGEMENT PLAN

Once the Watershed Classification is finalized, it is used as the basis of managing water quality within the classification area. For example, it can be used:

- **As a Planning Tool**: Developers can use the Surface Water Quality Objectives assigned through the Watershed Classification process early in their planning to assist with decisions on the type and cost of environmental controls required at any proposed locations.
- **To Develop Effluent Discharge Limits:** Manitoba Environment uses the Water Quality Objectives set through the Watershed Classification Process to assist with the development of legally-binding effluent discharge limits. While Watershed Classification provides overall objectives for the watershed, individual licences may be required by communities, industries and individuals which may have an impact on achieving those objectives. For an example, a community discharging its sewage into a river requires a site-specific environmental licence, a process which may require another Clean Environment Commission hearing dealing with that particular project. For an example, after the Clean Environment Commission completes its Water Classification hearings for the Red and Assiniboine watershed currently under review, it will be asked to hold public hearings to establish site-specific licences for the City of Winnipeg's three sewage treatment plants.
- **To Assist with Controlling Pollution From Some Land-use Practices:** The Surface Water Quality Objectives assigned through the Watershed Classification process, can be used to assist in controlling certain land-use practices that may release non-point source pollutants into nearby surface bodies of water.

FOUR WATERSHEDS CLASSIFIED

In 1976, the Environmental Management Division of Manitoba Environment prepared a proposal outlining a system of Water Quality Objectives and watershed classifications, that would serve as the basis of a surface water quality management program for Manitoba. Since that time four watersheds have been classified.

- **The Souris River Watershed**
  The first Clean Environment Commission Watershed Classification hearings dealt with the classification of the Souris River principal watershed division in 1979.
- **The Entire Red River Watershed**
  Evidence presented at these hearings indicated that the water quality of the Red River through and downstream of the City of Winnipeg was not of sufficient quality to permit expected and desired uses. This 1981 report recommended a more detailed proposal be developed for individual portions of this watershed, such as the area within and downstream of the City of Winnipeg.
- **The Grass-Burntwood Principal Watershed Division.**
  The "Report on a Proposal for the Classification of Manitoba's Surface Water: Grass-Burntwood Rivers Principal Watershed Division" was published in 1981.
- **Clearwater Lake.**
  The Classification of Clearwater Lake Watershed Region was completed in 1989. The Clean Environment Commission supported the proposal of a "High Quality Designation" for this watershed.

Manitoba's Water Quality Objectives

Because Manitoba's surface water is such a vital resource, Manitoba Environment has established objectives which define minimum levels of quality necessary to protect important water uses. The Manitoba Surface Water Quality Objectives, when met, will protect human health, aquatic plant and animal communities, or other designated water uses.

Many other jurisdictions in North America, Europe and elsewhere use Water Quality Objectives to protect water quality. Wherever possible or necessary, Manitoba's Surface Water Quality Objectives have been modified to reflect the unique conditions of this province.

Manitoba's Surface Water Quality Objectives are in two principal forms:

- Qualitative (narrative or general); and
- Quantitative (numerical or specific).

Narrative Surface Water Quality Objectives attempt to describe conditions within Manitoba's aquatic system that should be avoided. Generally, they are statements of intent developed for a number of characteristics including odour and taste, floating material, oil and grease, and plant nutrients. They are used where a lack of scientific information precludes the development of more specific numerical objectives. The following is one such statement:

Water must be "free from oil and grease residues which cause a visible film or sheen upon the waters or any discolouration of the surface of adjoining shorelines or causes a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shoreline."

Numerical Surface Water Quality Objectives specify maximum levels of certain materials that can be tolerated before unacceptable harm occurs to human health, aquatic plants or animals, or other water uses. They are arranged into five classes according to important water uses. These are as follows:

Class 1: Domestic Consumption

Surface Water Quality Objectives in this class will protect the use of raw water supplies for domestic consumption, cooking, food processing, or other household uses. It is necessary, however, to disinfect all raw surface water supplies prior to use as a minimum level of treatment.

Class 2: Aquatic Life and Wildlife

Surface Water Quality Objectives within this class will protect fish, amphibians, reptiles, and other forms of aquatic life including aquatic insects and plants. Protection is also afforded other wildlife that may use bodies of water as habitat or for drinking.

Class 3: Industrial Consumption

Surface Water Quality Objectives within this class will protect the quality of raw water sources used for industrial purposes, such as equipment cooling.

Class 4: Agricultural Consumption

Surface Water Quality Objectives in this class are intended to protect irrigated greenhouse plants, irrigated field crops and water for livestock.

Class 5: Recreation

Surface Water Quality Objectives within this class will protect human health during swimming, water skiing, canoeing, boating and other water-related recreation.

The following is an example of a quantitative Surface Water Quality Objective:

"To protect bodies of water inhabited by various forms of aquatic life, total residual chlorine should not exceed 11 µg/L or 11 micrograms of total residual chlorine in each litre of water.

Similar quantitative objectives have been developed for over 70 different potential pollutants.

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The rivers today...

CURRENT USES AND WATER QUALITY

In order to determine what the quality of the water should be, we must first consider the present and potential uses and the condition of the rivers. An assessment of those uses and conditions is an essential element of the Clean Environment Commission hearings.

CURRENT USES

Recreation

Manitoba's rivers and creeks are used extensively for recreation, including power boating, fishing, water-skiing, canoeing, rowing, jet-skiing, hiking, picnicking and aesthetic enjoyment.

Many Manitobans and visitors make use of the numerous parks, golf courses, walkways and historic sites located on the banks of the rivers. Recent renewal of river bank property, such as that at The Forks, is encouraging more river use. Winnipeg's Harbour Master has estimated that between 1988 and1989, there was a 25% increase in the number of people and boats using the river. On weekends, there are as many as 200 moving boats in Winnipeg.

A creel census from 1988 to 1989 tabulated the number of boats, boat anglers and shore anglers (Table 1). This survey illustrates the extensive recreational use of the Red River for sport fishing during the open water season. The Red River between Lockport and Lake Winnipeg is the most popular fishery in Manitoba. This area attracts anglers because it is close to Winnipeg and offers a variety of angling experiences.

The Red River fishery has three major components:

- The fall and winter walleye that annually move into the river in September and October.
- The large channel catfish that congregate in the river, primarily in May, June and July.

TABLE 1: Recreational fishing use numbers for the Red River between Lockport and Lake Winnipeg for the open water season, based on 1988/1989 creel survey conducted by the Fisheries Branch of Manitoba Natural Resources.

MONTH	TIME OF WEEK	MEAN # OF BOATS	MEAN # OF BOAT ANGLERS	MEAN # OF SHORE ANGLERS
MAY	Weekend	61	166	434
	Weekday	18	45	128
JUNE	Weekend	39	117	173
	Weekday	12	31	95
JULY	Weekend	54	142	264
	Weekday	12	36	72
AUGUST	Weekend	40	120	210
	Weekday	10	32	68
SEPTEMBER	Weekend	75	204	147
	Weekday	32	112	60
OCTOBER	Weekend	101	284	87
	Weekday	49	140	46
TOTALS	May-Oct	9,468	26,588	33,665

- General angling for all species of fish in the river.

As many as 200,480 fish (representing 102,855 kilograms) were caught in the Red River between Lockport and Lake Winnipeg during the 1982 open water season.

Domestic consumption

Downstream from the City of Winnipeg, only Selkirk utilizes the Red River as a domestic water supply. Selkirk draws water from two wells which is supplemented with Red River water when consumption exceeds the well supply. In May of 1991, Selkirk reverted to 35% Red River water due to a mechanical failure in one of the wells.

Irrigation

Many commercial and domestic gardening and horticulture operations are located close to the rivers where they can gain access to an inexpensive water supply for irrigation. In addition, many of the City of Winnipeg parks and golf courses use river water for irrigation and landscaping (Table 2).

Aquatic life and wildlife

The rivers and creeks sustain both aquatic and semi-aquatic communities. The Red River supports a diverse population of cool water fish. At least 46 fish species are found in the Red River upstream of the Lockport Dam, while 50 species have been noted downstream of the Lockport Dam. Tagging studies on fish in the Red River have indicated that there is extensive fish movement in the river. Catfish tagged near Selkirk have been recaptured in North Dakota.

Even some of the creeks most heavily affected by development provide important habitat for fish, birds, reptiles, amphibians and mammals. A 1986 study of Omand's Creek identified 153 species of higher plants, 19 species of butterflies, 71 species of birds and a variety of aquatic insects, amphibians and mammals. Many of the tributaries serve as spawning areas for fish species from the Red and Assiniboine rivers.

Industrial

The rivers are used to a limited degree for industrial activities, including waste disposal and cooling thermal generation equipment.

TABLE 2: City of Winnipeg community and regional parks, and cemetery grounds estimated river water usage.

SITE	SOURCE	USE	EST. QUANTITY (L/yr)	TIME OF USE
Assiniboine Park	Assiniboine R.	duck pond, irrigation of gardens	38,000,000.	24 hrs/day, May-Oct.
Maryland Bridge Site	Assiniboine R.	park irrigation	4,280,000.	9:00am-2:00pm, May-Sept.
John Blumberg Park	Assiniboine R.	park irrigation	10,206,000.	8:30am-3:30pm, May-Sept.
Stephen Juba Park	Red. R.	park irrigation	2,041,200.	8:30am-3:30pm, May-Sept.
Bonnycastle Park	Assiniboine R.	park irrigation	3,061,800.	8:30am-3:30pm, May-Sept.
Fraser's Grove Park	Red R.	park irrigation	2,041,200.	8:30am-3:30pm, May-Sept.
St. Vital Park	Red R.	duck ponds, park irrigation	112,300,000	8:30am-4:00pm, May-Oct.
Whittier Park	Red R.	park irrigation	5,184,000.	8:30am-3:30pm May-Sept.
Cresent Drive Park	Red R.	park irrigation	2,073,600.	8:30am-3:30pm May-Sept.
King's Park Park	Red R.	park irrigation, ornamental lake	137,443,000	24 hrs/day May-Oct.
St. Vital Cemetery	Red R	cemetery irrigation	3,939,480.	8:00am-9:00pm, May-Sept.
Brookside Cemetary	Omand's Ck.	cemetery irrigation	not metered	Daylight hours, June-Sept.

Disposal of domestic wastes

The treated wastes from the City of Winnipeg's sewage treatment facilities are discharged to the Red and Assiniboine rivers. Currently there is no disinfection of this sewage to destroy the bacteria and viruses, before it is discharged into the rivers.

During heavy rains, the sewers and treatment facilities cannot handle the excess flow, and storm water along with raw sewage is carried directly to the rivers. It has been estimated that 30 of these storms occur each year. Approximately 50% of Winnipeg is still serviced by these combined storm and sanitary sewers.

In addition, approximately 20 private treatment facilities discharge effluent into the river. Many

municipalities also discharge sewage effluent to the rivers and streams, in accordance with standards set out in their environmental licences.

WATER QUALITY SUMMARY

The Clean Environment Commission hearing will deal with an area which falls within the most heavily populated area of Manitoba. Consequently the rivers within the classification area are some of the most heavily impacted by human activity in the province. The following summarizes the most significant water quality concerns in the classification area.

Data indicates that, in a number of cases, the Manitoba Surface Water Quality Objectives are not being met; that is, the quality of the water is not always appropriate for some of the rivers' current uses.

Microbiological quality

- Fecal coliform bacteria are useful microbiological indicators of water quality because they are present in virtually all warm-blooded animals including humans, in numbers far exceeding the pathogens which cause illness. Elevated numbers of these organisms indicate fecal contamination and the possible presence of bacterial and viral pathogens which can cause infections of the eyes, ears, nose, throat and skin, as well as gastroenteritis (fever, stomach cramps, vomiting and diarrhea).

- Enteric viruses have been isolated from Red River surface water as well as downstream drinking water samples, indicating that some viruses survived both the sewage and water treatment processes.

- The microbiological quality of the Red and Assiniboine rivers, within and downstream of Winnipeg, does not meet existing water quality objectives to support the present uses. Significant deterioration in the bacterial quality occurs as the river flows through Winnipeg (Figure 2).

- The microbiological quality in the tributaries indicate that Bunn's Creek and Sturgeon Creek often do not meet existing objectives for secondary recreation and irrigation.

Un-ionized ammonia toxicity

- Excessive quantities of ammonia are undesirable since the un-ionized form of ammonia is toxic to aquatic invertebrates and fish.

- Effluent discharges from within the City of Winnipeg contribute a significant amount of ammonia to the Red and Assiniboine rivers.

- Acute (short-term and sudden) toxic responses of fish to un-ionized ammonia includes loss of equilibrium; hyperexcitability; increased breathing, cardiac output and oxygen uptake; and convulsions, coma and death. Chronic (long-term) responses to un-ionized ammonia include a reduction in hatching success; reduction in growth rate and morphological development; and pathological changes in the tissues of gills, livers and kidneys. The response depends on the concentration of un-ionized ammonia.

- There is a significant increasing trend in ammonia concentrations in the Red and Assiniboine rivers within and downstream of Winnipeg.

- Within and downstream of Winnipeg, the un-ionized ammonia objective which protects aquatic life is quite often not met. Upstream of the city, these levels are more often appropriate for aquatic life protection (Figure 3).

- Although there has been no evidence of fish kills from un-ionized ammonia, the increased frequency with which the un-ionized ammonia objectives are not met suggests that sublethal effects may be occurring.

Nutrient loading

Nutrient enrichment (eutrophication) in these surface waters is being accelerated by human activity. Nutrient enrichment can result in changes in the species composition within an aquatic system. Significant quantities of the plant nutrients nitrogen and phosphorus are discharged to the surface waters within Winnipeg.

Phosphorus

- A significant amount of phosphorus enters the Red and Assiniboine rivers within the City of Winnipeg. Phosphorus levels downstream of Winnipeg are 30% higher than upstream of Winnipeg.

- The Manitoba Surface Water Quality Objectives were established for phosphorus, since this nutrient may stimulate excessive growth of aquatic weeds and algae. These objectives are not met over 99% of the time upstream, within and downstream of the City of Winnipeg. The tributaries are also affected by excessive phosphorus. However, phosphorous may not be the factor limiting plant growth at all times of the year.

Nitrogen

- Statistically higher levels of nitrogen (*i.e.* nitrate/nitrite and total Kjeldhal) are found at the Selkirk site compared to those upstream sites at Headingley and the South Floodway control.

- There is a significant increasing trend in total Kjeldhal nitrogen concentrations within and downstream of Winnipeg.

- Nitrate/nitrite loading occurs primarily through non-point (*i.e.* diffuse) sources, whereas ammonia loading occurs primarily from point (*i.e.* concentrated) source loading.

Oxygen

- Oxygen levels in the Red and Assiniboine are sufficient to support a cool water fishery (*i.e.* 47% saturation).

- Improvements in the City of Winnipeg treatment facilities have resulted in a significant increasing trend in oxygen concentrations at some water quality stations.

- The tributaries generally maintain an oxygen level which more than achieves the saturation objective during the summer months; however, the Seine River and Bunn's Creek have fallen short of that objectives by 11% and 19%, respectively, during the summer months.

Pesticides

- The levels of pesticides in the Red and Assiniboine rivers are within the objectives established for the protection of the existing water uses.

- Within or downstream of the City of Winnipeg, there is some additional input of pesticides into the Red River.

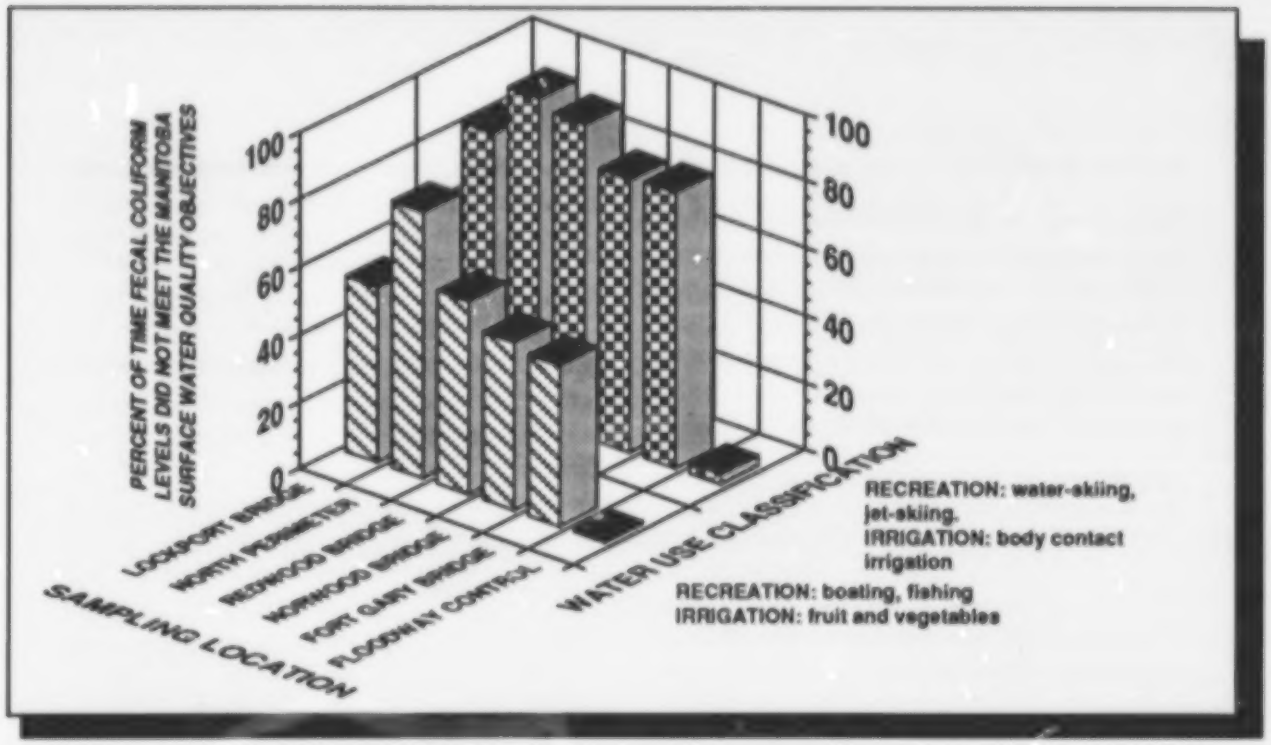

FIGURE 2: Upstream of Winnipeg, at the Floodway control, fecal coliform levels in the Red River are most often appropriate for both recreation and irrigation use. Within and downstream of Winnipeg, at the remaining stations, the fecal coliform levels are often not appropriate for these same uses.

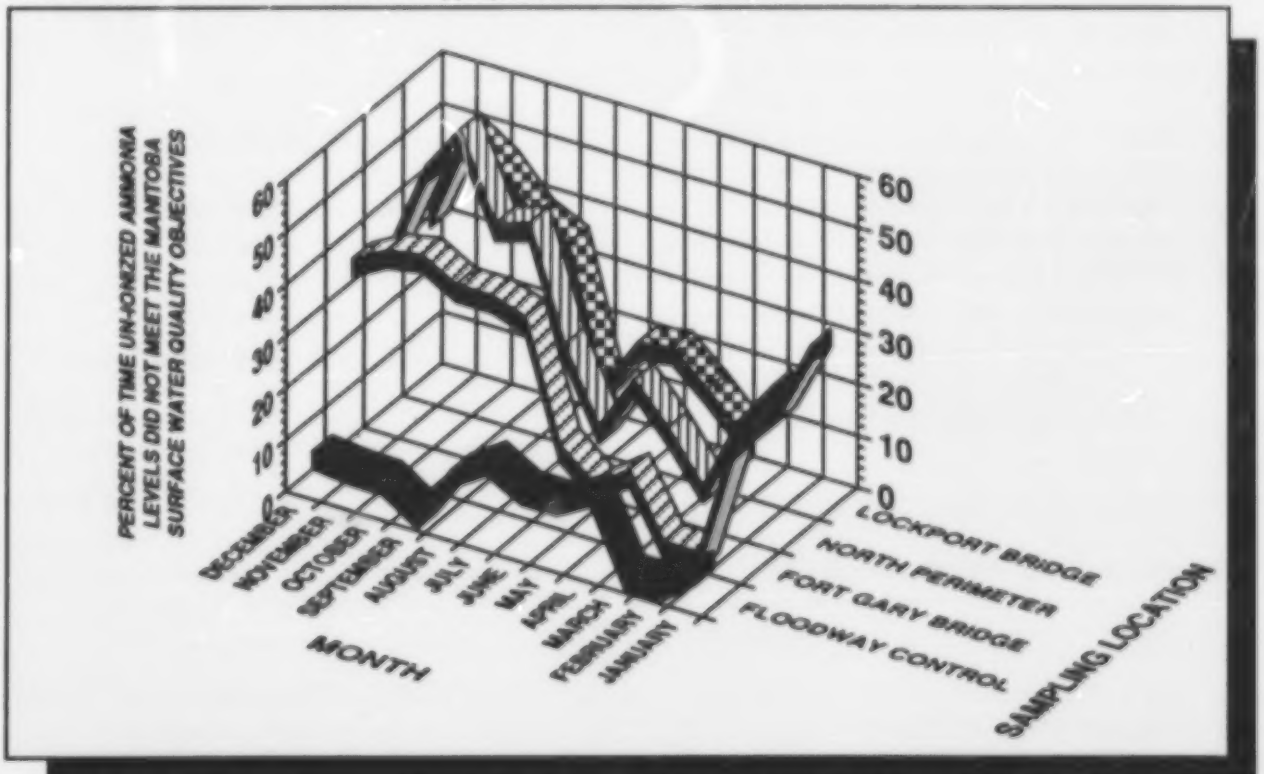

FIGURE 3: While un-ionized ammonia levels in the Red River are affected by the seasons, they also change substantially as the river flows through the City of Winnipeg. Unacceptable levels (as set out in the Manitoba Water Quality Objectives) are much more frequent within and downstream of the city, as compared to upstream at the floodway control site.

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Manitoba Environment's proposal....

PROTECTING THE QUALITY OF OUR RIVERS IN A DEVELOPED AREA

Manitoba Environment is proposing that Water Quality Objectives be established to protect current and potential uses of the Red and Assiniboine rivers and their tributaries.

At the same time, the department recognizes that the watershed under review is the most heavily-developed area of the province. In some cases, the impacts have been significant. However, by implementing a feasible long-term water quality management strategy based on the provincial Watershed Classification Process, the quality of the water can be maintained or improved.

In recognition of these factors, the Department is proposing that the watershed be designated for "routine" protection. Where there are multiple uses of the river, the water quality objectives from the most sensitive use would be implemented.

The routine level of protection, which normally applies to water bodies which may have been affected by development to some degree, consists of the following combination:

- The use of economically available technology-based treatment systems to remove as many pollutants as practical; and
- The use of Manitoba Surface Water Quality Objectives to develop effluent discharge limitations for those remaining pollutants that may not be adequately removed by the standard treatment systems.

Manitoba Environment, through environmental licences, prevents unacceptable impacts, while recognizing that some change will result from the developed nature of the region.

Following a thorough analysis of the available data, the Department developed its proposal by applying the Manitoba Surface Water Quality Objectives to the existing and potential water uses.

Manitoba Environment will put forth this Water Classification proposal to the Clean Environment Commission hearings this fall. By releasing the proposal at this time, the department hopes to encourage interest and involvement in the hearings, and at the same time provide a point of reference to initiate public discussion and debate.

The final recommendations of the Clean Environment Commission, which operates independently of the department, will be based on all the information presented at the public hearings.

The following provides a general description of the classification proposed by Manitoba Environment (Table 3.) The specific narrative and numeric Water Quality Objectives for each use class are detailed in the 1988 Manitoba Environment document, "Manitoba Surface Water Quality Objectives."

CLASS 1: DOMESTIC CONSUMPTION:

Manitoba Environment proposes that the water in the Red and LaSalle rivers be protected for domestic consumption. Currently, these are the only two rivers in the classification area used for drinking water. The proposed objectives would ensure that the waters could be used for human consumption after treatment.

CLASS 2B: COOL WATER AQUATIC LIFE AND WILDLIFE

The proposal recommends that all the rivers and tributaries be classified to protect cool water aquatic life and wildlife, such as fish, amphibians, reptiles and other forms of life including aquatic insects and algae. By ensuring the protection of the aquatic communities, other wildlife that rely upon surface waters for habitat and food supplies would be indirectly protected. These include ducks, geese, and furbearing mammals such as muskrats.

CLASS 3: INDUSTRIAL CONSUMPTION

It is proposed that the Red, Assiniboine, Seine and La Salle rivers, along with Cook's, Netley and Devils creeks, be classified for industrial consumption. Only the Red River is currently used for industrial consumption, for cooling industrial equipment.

CLASS 4A: GREENHOUSE IRRIGATION:

Manitoba Environment has proposed that the Red and Assiniboine rivers be protected for greenhouse irrigation. It is unlikely other surface waters within the classification area would be used as a sole source of irrigation water for intensive horticultural crop production.

The proposed objectives would ensure the long-term protection of soils from the accumulation of substances that may be harmful or cause a reduction in fertility; would ensure the protection of plants; and would protect people from harmful effects caused by the accumulation of substances on produce that may not be processed or washed prior to consumption.

CLASS 4B: FIELD CROP IRRIGATION

It is proposed that all surface waters in the classification area, be protected for field crop irrigation which includes the following:

- Lawn watering
- Domestic gardens

TABLE 3: Manitoba Environments proposed classification of surface waters.

CLASS	CLASS 1 DOMESTIC CONSUMPTION	CLASS 2B COOL WATER AQUATIC LIFE AND WILDLIFE	CLASS 3 INDUSTRIAL CONSUMPTION	CLASS 4A GREENHOUSE IRRIGATION	CLASS 4B FIELD CROP IRRIGATION	CLASS 4D LIVESTOCK WATERING	CLASS 5A PRIMARY RECREATION	CLASS 5B SECONDARY RECREATION
PROTECTION LEVEL		ROUTINE	ROUTINE	ROUTINE	ROUTINE	ROUTINE	ROUTINE	ROUTINE
RED RIVER	YES	YES	YES	YES	YES (3)	YES	YES	YES
ASSINIBOINE RIVER		YES	YES	YES	YES (3)	YES		YES
SEINE RIVER		YES	YES		YES	YES		YES
LA SALLE RIVER	YES	YES	YES		YES	YES		YES
OMAND'S CREEK		YES			YES			YES
STURGEON CREEK		YES			YES	YES		YES
BUNNS CREEK		YES			YES			YES
COOK'S CREEK (1)		YES	YES		YES	YES		YES
NETLEY CREEK (2)		YES	YES		YES	YES		YES
DEVILS CREEK		YES	YES		YES	YES		YES
BALDRY CREEK	not classified							
GRASSMERE CREEK	not classified							
BOTTOMLY CREEK	not classified							
TRURO CREEK	not classified							
McLEOD'S CREEK	not classified							
PARKS CREEK	not classified							
GUNNS CREEK	not classified							
MIREY CREEK	not classified							

Note: Proposed classification is based on both existing and potential use.
(1) Includes Dubas Creek
(2) Includes Wavey and Muckle creeks
(3) Fecal coliform objective of 200/100 mL due to body contact irrigation.

- Commercial fruit and vegetable gardens.
- Parks and golf courses
- Cereal crop

The proposedwater quality objectives would ensure that, where irrigation supplements natural precipitation, soils are protected from the accumulation of substances that may be harmful or cause a reduction in fertility. Along with protecting plants, people would be protected from the harmful effects of substances accumulated on produce that may not be processed or properly cleaned prior to consumption.

CLASS 4C: LIVESTOCK WATERING

Manitoba Environment has proposed that all waters, with the exception of Omand's and Bunns Creeks, be protected for livestock watering. These two tributaries are excluded because they are not used for livestock, and considering their location and size, are unlikely to be used for future livestock watering activities.

CLASS 5A: PRIMARY RECREATION

It is proposed that only the Red River be protected for primary recreation. The Assiniboine River and the other tributaries do not have adequate flows, are too shallow and have too many navigational hazards to be used for primary recreation. (The City of Winnipeg currently does not permit waterskiing on the Assiniboine River.)

Theproposed objectives would ensure that people involved in recreation in which the entire body may become completely immersed, such as swimming, wading, water-skiing and jet-skiing, are protected.

CLASS 5B: SECONDARY RECREATION

Manitoba Environment proposes that all surface waters in the watershed under review, be protected for secondary recreation activities.The proposed objectives would provide protection where body contact with water is incidental, accidental or sensory, such as fishing, boating, camping, picnicking, hiking and aesthetic enjoyment.

5

Summary...

NOW IT'S UP TO YOU

The upcoming Clean Environment Commission hearings will establish Water Quality Objectives for the rivers and their tributaries within and downstream of Winnipeg.

Manitoba Environment has released its proposal to stimulate discussion and encourage people to become involved in the public hearings. We invite you to review the data, develop your own proposals, and present your views to the Clean Environment Commission.

SOME TOUGH CHOICES

Since there may be significant costs associated with improving water quality conditions, the relative importance of these water uses must be identified by you and other taxpayers. Some of the options Manitobans face include:

- Accept the current water quality impairments, and discontinue some uses.
- Accept the current water quality impairments and continue existing uses, introduce alternate programs such as public warnings and bear the increased risks associated with using degraded water.
- Improve the current water quality over an economically feasible time frame.

WHY PUBLIC HEARINGS ARE IMPORTANT

The following provides examples why these hearings are important:

- Water Quality Objectives will be set to protect identified beneficial water uses in the rivers and tributaries within and downstream of Winnipeg.

- These Water Quality Objectives will be applied to all environmental licencing of municipal and industrial dischargers. Existing dischargers may be required to develop an implementation strategy to upgrade existing facilities over a reasonable time frame.

- This may mean improvements to the City of Winnipeg and other existing waste water-treatment systems. Future upgrading options include the disinfection of sewage effluent, an ammonia removal process and the separation of sanitary and storm sewers.

- Enhancement plans may be initiated to improve water quality to meet the desired water uses. Examples of such programs may include enhancement of aquatic habitat for fish or other wildlife or the creation of buffer zones to reduce non-point pollution loading.

GET OTHERS TO JOIN YOU

Encourage your family, friends, neighbors and co-workers to become involved. Discuss your ideas and concerns with others. The decisions made at these hearings will affect both the present and future generations of Manitobans. Be part of that decision-making process.

YOUR OPINIONS COUNT

Provide the Clean Environment Commission with your opinions. Technical documents and other non-technical general information are available to help you prepare. Public submissions and presentations, written or verbal, are encouraged and welcomed.

TO LEARN MORE ABOUT THE HEARING PROCESS

CLEAN ENVIRONMENT COMMISSION
Towne Square
P.O. Box 21410
284 Reimer Avenue
Steinbach, Manitoba
R0A 2T3

Telephone 326-2395
Toll free 1-800-282-8069
Fax 326-2472

TO OBTAIN MORE TECHNICAL & OTHER INFORMATION

SHARON GURNEY
Water Quality Management Section
Manitoba Environment
Building 2, 139 Tuxedo Avenue
Winnipeg, Manitoba
R3N 0H6

Telephone 945-7114
Fax 945-5229
Toll free 1-800-282-8069 (extension 7114)

Or visit the Public Registries located at:

- The Resource Centre, Manitoba Environment, Building 2, 139 Tuxedo Avenue, Winnipeg.
- Selkirk Community Library, P.O. Box 388, 303 Main Street, Selkirk.
- Legislative Library, 200 Vaughan Street, Winnipeg.
- Centennial Public Library, 251 Donald Street, Winnipeg.